USC 260: Research as a Profession
Section 001: Fridays 3:00-3:50pm + study abroad component (2 credits)

Instructors
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Office Hours: By appointment  Office Hours: By appointment

Course Description
Broadly defined, research is an interconnected and global process that adds new knowledge, creativity, and innovation to any discipline, from the sciences to the arts to the humanities and in between. During the first half of this course, students will build a foundation of knowledge in the research enterprise including inquiry, research methods, and research governance in a cross-cultural, multi-disciplinary context. Through the use of site-specific case studies, students will analyze past discoveries and innovations that have shaped our current world. This analysis will then become the basis for a research project during the study abroad component of the course. Upon their return, students will learn to synthesize their findings, draw conclusions, and present their research in a cross-disciplinary manner, developing strong oral and written communication skills. To enroll, students must be accepted to the associated study abroad program. All majors are encouraged.

General Education Program (GEP)
Students completing this course for a grade may receive the following GEP credit:
Interdisciplinary Perspectives
Global Knowledge

Learning Outcomes
Upon successful completion of this course, students will be able to:
1. Explain the distinct research/creativity processes among science/technology, social sciences, and arts. (Interdisciplinary Perspectives Obj. 1)
2. Describe the interrelatedness of research within science/technology, social sciences/humanities, and arts. (Interdisciplinary Perspectives Obj. 2)
3. Interpret relevant research governance within the sciences/technology, social sciences/humanities, and arts including the responsible conduct of research. (Interdisciplinary Perspectives Obj. 3)
4. Identify and examine distinguishing characteristics of technological or scientific developments in a society outside the United States.
5. Describe research as an interconnected, interdisciplinary, and global process.
6. Develop their own scientific research project
7. Apply skills in data analysis to test hypotheses
8. Compare and contrast research findings with the work of others
9. Describe their research and findings in written and oral formats

Course Structure
This course will include lectures, discussions, group activities, research activities, and a study abroad component. Research exercises are inquiry-based and will allow students to follow a question through to completion using the scientific method. These exercises are designed to reinforce materials discussed in lecture and afford students the opportunity to gain hands-on experience in designing and executing experiments and interpreting the results. Students will be expected to conduct at least 15 hours worth of empirical research during the study abroad
component. The main course product will be a Research Report and Poster presentation during either the NC State Research & Creativity Symposium or the statewide research symposium SNCURCS.

Course Textbooks
“Furthering America’s Research Enterprise” (2104) RF Celeste, A Griswald, ML Straf, National Academies Press, ISBN-978-0-309-30522-9, provided to students at no charge as a printable PDF.

Other Course Expenses & Transportation
Students will be expected to pay the program fee for the study abroad component per the schedule designated by the Study Abroad Office/European Center in Prague. For the 2020 spring break program to the European Center in Prague, this fee will be approximately $2,500 and will include the application fee, accommodations, excursions/field trips, Prague city transportation pass, health insurance, and some meals. Students will be expected to cover airfare expenses to Prague, most meals, personal expenses, passport, and visa. Additional scholarships are available and encouraged. Students will be provided with estimated costs when they apply to the student abroad program.

Flights and ground transportation to and from the study abroad site will be planned by the Study Abroad Office/European Center in Prague for this course section. Students will be expected to cover the costs of airfare. A city-wide transportation pass will be provided in the overall program fee. Field trips and excursions will also be covered by the program fee. The Office of Undergraduate Research will support each student’s research project with a research award of up to $500 to support data collection.

Safety & Risk Assumptions
Prior to participation in an NC State study abroad program, students are required to agree to and digitally sign the North Carolina State University Study Abroad Office Participant Agreement, which outlines safety and risk associated with the program.

Grade Components
Critical Thinking Short Responses (30%) - Students will engage in online discussions based on provided prompts. Each prompted discussion will be worth 10% of the course grade.
- Short Response #1: Research Perspectives
- Short Response #2: Research Academies
- Short Response #3: Data Visualization

Self-Reflections (10%) - Prior to departure and upon return, students will reflect on their thinking. Each reflection is worth 5% of the course grade.

Research Project (components and percent of grade listed below)
Students will develop a research project involving one of the three pillars of the Research Enterprise (Talented and Interconnected Workforce, Adequate and Dependable Resources, World-Class Basic Research) in the study abroad location and evaluate the impact of an additional factor (race, gender, religion, political affiliation, etc.) on the discovery and benefits to society. Students will ground their project through one of the three major sociological perspectives: the symbolic interactionist perspective, the functionalist perspective, and the conflict perspective, each of which offers paradigms for explaining how the local culture influences research.

To do this, students will select a case study from the list below. From this case study, students will develop a proposal for the research they want to conduct while in Prague. Research may only be conducted in Prague. No travel outside of the city will be permitted with the exception of course field trips.

Case Studies:
- Carl Ferdinand Cori - Biochemist and pharmacologist, Nobel Prize winner, discovered how glycogen is broken down and resynthesized in the body for use as a store and source of energy
- **Gerti Cori** - Biochemist and pharmacologist, Nobel Prize winner, discovered how glycogen is broken down and resynthesized in the body for use as a store and source of energy (wife of Carl Ferdinand Cori)

- **Josef Ludvík František Ressel** - Forester and inventor, invented the screw propeller for naval ships

- **Jan Jansky** - Psychiatrist and neurologist, discovered human blood could be classified into four distinct groups

- **Stanislav Brebera** - Chemist, developed of Semtex, a general purpose plastic explosive

- **Otto Wichterle** - Chemist, invented soft contacts

- **Adéla Kochanovská-Němejcová** - First Czech female professor of engineering, pioneer in the field of radiocrystallography

- **Helena Raskova** - Legendary pharmacologist

- **David Cerny** - Contemporary artist and sculptor whose works often focus on social and political commentary

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**Research Proposal (20%)** - Students will submit a 3 page research proposal based on their selected case study. The proposal must include:

I. Title

II. Introduction

III. Background and Significance
   A. Provide a brief description of your case study
   B. What was the significance of this researcher at the time? What impact did it have on the world?
   C. What impact has this research had on other disciplines?
   D. What barriers did this researcher encounter and/or overcome?
   E. What were the unique challenges and opportunities the researcher encountered as a researcher in Prague?

IV. Objectives/Goals
   A. While in Prague, what question related to this case study do you want to research?
   B. Why is this question important?

V. Research Design and Methodology
   A. How will you research your question?
   B. What type of data will you be collecting? What type of sources will you be analyzing?
   C. How will you analyze your data?
   D. Explain any limitations your research may have in terms of reliability and applicability of results.

VI. Hypothesis
   A. What do you expect the results of your research to be?

VII. Conclusion

VIII. References/Sources

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**Field Notes (10%)** - While conducting research in Prague, students will be expected to maintain field notes. These notes will be collected at the end of each day for credit. All field notes will be returned the following morning.

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**Paper and Presentation of Research (20%)** - At the conclusion of the course, students will present their research at the Spring Undergraduate Research & Creativity Symposium. They will develop a poster that must include:

I. Title

II. Author

III. Abstract

IV. Introduction

V. Methodology
Students will also submit a reflection paper on how their selected case study and subsequent research demonstrates how research overall is an interconnected, interdisciplinary, and global process.

**Participation (10%)** - Students are expected to contribute meaningful discussion in each class. Students will be provided with midterm and final grades in this area to track their progress. Making contributions to discussion means: asking questions about readings or things said in class that are unclear or confusing, offering answers to questions asked by others in class, making claims or observations about the issues being discussed, offering support/criticism/modification/clarification for claims being discussed. Evaluation of participation falls into the following categories:

- **A-range:** (What every student should strive for) Regularly makes helpful, relevant contributions to discussion. Occasionally offers observations that challenge other participants to think about the material in new ways. Actively participates in small-group discussions.
- **B-range:** Occasionally makes helpful, relevant contributions to discussion. Actively participates in small-group discussions.
- **C-range:** Attends regularly and actively pays attention to discussion. Occasionally contributes to small-group discussions.
- **D or F range:** Does not attend regularly. Does not pay attention to discussion. Does not contribute to small-group discussions.

**Letter Grades**

This Course uses Standard NCSU Letter Grading:

\[
\begin{align*}
98 & \leq & A^+ & \leq & 100 \\
92 & \leq & A & < & 98 \\
90 & \leq & A^- & < & 92 \\
88 & \leq & B^+ & < & 90 \\
82 & \leq & B & < & 88 \\
80 & \leq & B^- & < & 82 \\
78 & \leq & C^+ & < & 80 \\
72 & \leq & C & < & 78 \\
70 & \leq & C^- & < & 72 \\
68 & \leq & D^+ & < & 70 \\
62 & \leq & D & < & 68 \\
60 & \leq & D^- & < & 62 \\
0 & \leq & F & < & 60 \\
\end{align*}
\]

**Requirements for Credit-Only (S/U) Grading**
In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to http://policies.ncsu.edu/regulation/reg-02-20-15.

Policies on Incomplete Grades
If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at http://policies.ncsu.edu/regulation/reg-02-50-3.

Attendance Policy
In the working world, you will be expected to show up and to participate each and every day in your particular occupation—the same will be expected in this class. It is expected that you arrive on time and stay until class is over. Do not leave early unless arranged in advance with the instructor. Students with excusable absences should contact the instructors with documentation and a plan for making up missed work. Each unexcused absence will lower the final course grade by one letter (example: a student earning an A who has one unexcused absence will have a final course grade of B).

Students are expected to attend all scheduled activities during the study abroad component. Students who have an emergency illness or other excusable reason must communicate with the instructors to determine how they will complete the course.

For complete attendance and excused absence policies, please see http://policies.ncsu.edu/regulation/reg-02-20-03

Makeup Work
Arrangements to make up missed work due to excused absences can be made by contacting the instructor as soon as possible.

Late Assignments
Assignments that are turned in after the due date will be deducted 10% for each week/class period late.

Academic Integrity
Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at http://policies.ncsu.edu/policy/pol-11-35-01. Your name/signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment."

Electronically-Hosted Course Components
This course will use Moodle and Google Hangouts.

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

Accommodations for Disabilities
Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Resource Office at Holmes Hall, Suite 304, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with
disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.01) (https://policies.ncsu.edu/regulation/reg-02-20-01/).

Non-Discrimination Policy
NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at http://policies.ncsu.edu/policy/pol-04-25-05 or http://www.ncsu.edu/equal_op/. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

NOTE: The course schedule is subject to change.

Pre-Study Abroad Schedule - Spring 2020

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Contact Type</th>
<th>Minutes</th>
<th>Contact Hours</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan 10</td>
<td>Lecture</td>
<td>50</td>
<td>1</td>
<td>Program/Course Overview + Expectations</td>
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<td>Read: FARE Chapters 1-2</td>
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<td>2</td>
<td>Jan 17</td>
<td>Lecture</td>
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<td>Conceptualizing Your Research</td>
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<td>Short Response #1: Research Perspectives (due Jan 23)</td>
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<td>Jan 24</td>
<td>Lecture</td>
<td>50</td>
<td>1</td>
<td>Case Study Review</td>
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<td>Mid-Term Writing Assignment: Comparative Ethnography (due Feb 28)</td>
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<td>Jan 31</td>
<td>Lecture</td>
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<td>Prague History &amp; Culture</td>
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<td>Read: FARE Chapter 3</td>
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<td>5</td>
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<td>Formulation of Research Question</td>
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<td>Read: FARE Chapter 4</td>
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<td>Research Planning</td>
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<td>Read: FARE Chapter 5</td>
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<td>Feb 21</td>
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<td>Read: FARE Chapter 6</td>
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<td>Lecture</td>
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<td>Final travel preparation</td>
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<td>Pre-Travel Reflection (due Mar 4)</td>
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Study Abroad Component - Spring 2020

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<th>Minutes</th>
<th>Contact Hours</th>
<th>Topic</th>
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<td>Travel Day</td>
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<td>Minutes</td>
<td>Contact Hours</td>
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<td>Program Review</td>
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<td>Post-Travel Reflection <em>(due Mar 27)</em></td>
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<td>Short Response #2: Research Academies <em>(due Apr 3)</em></td>
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<td>Lecture</td>
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<td>How to Present Your Data</td>
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<td>Short Response #3: Data Visualization <em>(due Apr 9)</em></td>
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<td>Apr 3</td>
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<td>Practice Presentations for Symposium</td>
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<td><em>(due in class: final paper and poster)</em></td>
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<td>Apr 22</td>
<td>Lab</td>
<td>200</td>
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<td>Poster presentations at NC State Spring Research &amp; Creativity Symposium</td>
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